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(54) **DIVERSITY BASED RELAY FOR WIRELESS COMMUNICATIONS BETWEEN A HEAD-MOUNTED DISPLAY AND A CONSOLE**

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(57) **ABSTRACT**

A head-mounted display (HMD) is wirelessly coupled to a console or a relay depending on the relative positions of the HMD, the console, and the relay. The HMD communicates wirelessly with the console using a beam that is oriented in a particular direction. As the position of the HMD changes, the quality of the communication link between the HMD and the console may degrade. In response to the degradation, the HMD forms a communication link with a relay, which operates as an intermediary between the HMD and the console. The relay communicates with the HMD over a dedicated communication channel that is isolated from the communication channel over which the relay communicates with the console.